IN THE CLAIMS

1 (Withdrawn). A method comprising:

reducing the grain size of a phase change material; and

reducing the crystallization time of the phase change material.

2 (Withdrawn). The method of claim 1 wherein reducing the grain size of the phase change material includes doping the material with nitrogen.

3 (Withdrawn). The method of claim 2 wherein reducing the grain size of the phase change material includes doping the material with nitrogen and oxygen.

4 (Withdrawn). The method of claim 1 wherein reducing the crystallization time of the phase change material includes doping the phase change material with titanium.

5 (Withdrawn). The method of claim 4 including doping the phase change material with ions of titanium.

6 (Withdrawn). The method of claim 5 including sputtering titanium.

7 (Withdrawn). The method of claim 5 including ion implanting titanium to reduce the crystallization time of the phase change material.

8 (Withdrawn). The method of claim 4 including providing a layer of titanium proximate to said phase change material.

9 (Withdrawn). The method of claim 8 including providing the layer of titanium sufficiently proximate to the phase change material that when the titanium is heated, titanium diffuses into the phase change material.

10 (Withdrawn). The method of claim 9 including causing the titanium to diffuse into the phase change material as a result of heating during processing of the phase change material.

Claims 11-15 (Canceled).

16 (Currently Amended). A semiconductor memory device comprising:

a semiconductor substrate; ~~and~~

a layer of chalcogenide material over said substrate, said chalcogenide material including a species to reduce the grain size of the chalcogenide material and a species to increase the crystallization speed of said chalcogenide material; and

a heater extending through said insulator to said chalcogenide material to heat said chalcogenide material.

17 (Original). The device of claim 16 wherein said chalcogenide material includes $Ge_2Sb_2Te_5$.

18 (Original). The device of claim 16 wherein the grains of the chalcogenide material are less than approximately 10 nanometers.

19 (Original). The device of claim 16 wherein the species to reduce grain size includes nitrogen.

20 (Original). The device of claim 16 wherein the species to increase crystallization speed includes titanium.

Claim 21 (Canceled).

22 (Original). The device of claim 16 including an insulator over said substrate and under said chalcogenide material.

Claim 23 (Cancelled).

24 (Original). The device of claim 16 including titanium containing layer under said chalcogenide material.

25 (Original). The device of claim 24 wherein said titanium containing layer is sufficiently proximate to said chalcogenide material that titanium may diffuse into the phase change material upon heating.

26 (Withdrawn). A system comprising:

a processor-based device;

a wireless interface coupled to said processor-based device; and

a semiconductor memory coupled to said device, said memory including the substrate, said memory further including a layer of chalcogenide material over said substrate, said chalcogenide material including a species to reduce the grain size of the chalcogenide material and a species to increase the crystallization speed of said chalcogenide material.

27 (Withdrawn). The system of claim 26 wherein the species to reduce grain size includes nitrogen.

28 (Withdrawn). The system of claim 26 wherein the species to increase crystallization speed includes titanium.

29 (Withdrawn). The system of claim 26 including an insulator over said substrate and under said chalcogenide material.

30 (Withdrawn). The system of claim 29 including a heater extending through said insulator to said chalcogenide material to heat said chalcogenide material.